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Single-Use Technologies V: Building The Future

Proceedings

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3-20-2022

### Conference Program

Magali Barbaroux

Martina Micheletti

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## *Program*

# Single-Use Technologies V: Building The Future

March 20 - 23, 2022

Marseille, France

### Conference Chairs

Magali Barbaroux, Sartorius, France

Martina Micheletti, University College London, UK



**Engineering Conference International**  
32 Broadway, Suite 314 - New York, NY 10004, USA  
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**Previous conference in this series**

***Single-Use Technologies: Bridging Polymer Science to Biotechnology Applications***

**October 18-21, 2015**

**Leesburg, VA, USA**

*Conference Chairs:*

Ekta Mahajan, Genentech, Inc., USA

Gary Lye, Department of Biochemical Engineering, University College London, UK

***Single-Use Technologies: Bridging Polymer Science to Biotechnology Applications II***

**May 7-10, 2017**

**Tomar, Portugal**

*Conference Chairs:*

Ekta Mahajan, Genentech, Inc., USA

Gary Lye, Department of Biochemical Engineering, University College London, UK

Regine Eibl, Zurich University of Applied Science, Switzerland

***Single-Use Technologies: Bridging Polymer Science to Biotechnology Applications III***

**September 23 – 26, 2018**

**Snowbird, Utah, USA**

*Conference Chairs:*

Weibing Ding, Amgen, USA

Martina Micheletti, University College London, United Kingdom

Robert Repetto, Pfizer, USA

***Single-Use Technologies IV Webinar***

**May 20, May 25, June 1, 2021**

*Conference Chairs:*

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**Conference Sponsors**

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## *Conference Schedule*

# **Single-Use Technologies V: Building The Future**

**March 20 - 23, 2022**

**Marseille, France**



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## Sunday, March 20, 2022

13:00	Early conference check-in (Check in will be available until 18:00 in the ECI secretariat room)
14:00 – 17:30	<b>Pre-conference Workshop</b> <b>Basics of environmental sustainability for bioprocess and plastics</b> Dr Brenda Parker, Associate Professor, UCL Dr Magali Barbaroux, Corporate Research Fellow, Sartorius Dr Jürgen Betz R&D Director Functional Films & Compounds, Südpack
14:00 – 14:45	<ul style="list-style-type: none"><li>• How to embed sustainability thinking into process design</li><li>• Software for Life Cycle Assessment methods to decide on product sustainability</li></ul>
14:45 – 15:00	Break
15:00 – 15:30	<ul style="list-style-type: none"><li>• Case studies</li><li>• Training next generation scientists on sustainability challenges</li></ul>
15:30 – 15:45	Break
15:45 – 16:30	<ul style="list-style-type: none"><li>• Plastic facts and challenges</li><li>• The New Plastic Economy: background</li><li>• Driving circularity around product and packaging life cycle (part I)</li></ul>
16:30 – 16:45	Break
16:45 – 17:30	<ul style="list-style-type: none"><li>• Driving circularity around product and packaging life cycle (part II)</li><li>• Final remarks and perspectives</li></ul>
17:45 – 18:30	Welcome drink
18:30 – 19:00	Chairs' opening remarks
19:00 – 20:00	<b>Keynote</b> <b>Post-approval changes to disposables/SUS</b> Patricia Hughes, CDER/FDA, USA (Virtual)
20:00 – 21:30	Dinner at the hotel

## **Monday, March 21, 2022**

07:00 – 08:30 Breakfast

### **Session 1 (Part 1): Single-use in pandemic times – lessons learned and future outlook**

Chairs: Ekta Mahajan, Genentech, USA  
Jeff Carter, Cytiva, USA

08:30 – 08:40 Introduction by Session Chairs

08:40 – 09:00 **Enablement by single-use technology of production of two billion vaccine doses of adenovirus-vectored vaccine in under a year**  
Carina Citra Dewi Joe, The University of Oxford, United Kingdom

09:00 – 09:20 **Proactive and reactive supply chain strategies for risk mitigation**  
Hana Sheikh, Genentech, USA (Virtual)

09:20 – 09:40 **Company and assembly redundancy – a case study**  
Sheryl Kane, Takeda, USA

### **Poster Flash**

09:40 – 09:45 **A high-throughput single-use platform for vaccine bioprocess development**  
(Poster #2)  
Sarah Slack, University College London, United Kingdom

09:45 – 09:50 **Supply of customized Single-Use-Mixer's under tight circumstances became an issue under COVID** (Poster #3)  
Per Stobbe, CerCell A/S, Denmark

09:50 – 09:55 **High-cell density cryopreservation strategy** (Poster #1)  
Julien Muzard, Entegris, France

09:55 – 10:00 **Assessing alternate sparger configurations to mitigate supply chain risks in single-use bioreactors** (Poster #32)  
Stephanie Ketcham, Bristol Myers Squibb, USA

10:00 – 10:30 Coffee Break

### **Session 1 (Part 2): Single-use in pandemic times – lessons learned and future outlook**

Chairs: Ekta Mahajan, Genentech USA  
Jeff Carter, Cytiva, USA

10:30 – 10:40 Introduction by Session Chairs

10:40 – 11:00 **Implementing X-ray for single use systems sterilization**  
Samuel Dorey, Sartorius, France

11:00 – 11:20 **Qualifying X-ray irradiation of single-use systems to address new challenges associated with single-use growth**  
James Hathcock, Pall Corporation, USA

## **Monday, March 21, 2022 (continued)**

- 11:20 – 11:40      **UNICAN: Dual capability in single use bioreactors**  
Ekta Mahajan, Genentech, USA (Virtual)
- 11:40 – 12:00      **Building the future with on demand 3D printing**  
Lena Achleitner, BOKU University of Natural Resources and Life Sciences,  
Austria
- 12:00 – 13:00      **Q&A Panel Discussion**
- 13:00 – 14:10      Lunch
- Poster Flash**
- 14:10 – 14:15      **Bioprocess characterization at the micro-scale: Optical sensor integration  
in a novel capillary-wave micro-bioreactor (Poster #7)**  
Kevin Viebrock, Technische Universität Braunschweig, Germany
- 14:15 – 14:20      **µRAMOS: Online monitoring of respiration activities in 96-Deepwell  
Microtiter plates (Poster #9)**  
Robert Dinger, AVT-.BioVT RWTH Aachen University, Germany
- 14:20 – 14:25      **In-line monitoring and control of glucose concentration with single-use  
sensors in CHO and stem cell applications (Poster #11)**  
Jan Müller, Zurich University of Applied Sciences, Switzerland
- 14:25 – 14:30      **Fluid dynamics in a novel single-use bioreactor for personalised T-cell  
therapies (Poster #20)**  
Gergana Georgieva Atanasova, University College London, United Kingdom
- Session 2: Sensors and their integration with single-use technology**  
Chairs: Torsten Mayr, TU Graz, Austria  
Jim Furey, PendoTECH, USA
- 14:30 – 14:40      Introduction by Session Chairs
- 14:40 – 15:00      **Improving bioreactor performance using mobile sensors**  
Jonas Bisgaard, Freesense ApS, Denmark
- 15:00 – 15:20      **The impact of baffles and probes on flow and power consumption in single-  
use bioreactors**  
Artemis Danae Charalambidou, University College London, United Kingdom
- 15:20 – 15:40      **Single-Use optical and electrochemical pH sensors in upstream  
bioprocessing**  
Erica Berilla, FDA, USA (Virtual)
- 15:40 – 16:00      **Measuring the liquid volume in a flexible bioprocess container with Single  
Use Pressure Sensors**  
Nick Troise, PendoTECH, USA
- 16:00 – 16:30      **Q&A Panel Discussion**
- 16:30 – 17:00      Stretch Break

**Monday, March 21, 2022 (continued)**

17:00 – 19:00           **Poster Session 1** with drinks and snacks

20:00 – 21:30           Dinner at MxMarseille

## Tuesday, March 22, 2022

07:00 – 09:30 Breakfast

09:30 – 12:30 Excursion – walking tour in the city of Marseille

12:30 – 13:40 Lunch

### Poster Flash

13:40 – 13:45 **Driving innovation in sustainability through product Life Cycle Assessments** (Poster #28)  
Nicole Hunter, Watson-Marlow Fluid Technology Group, United Kingdom

13:45 – 13:50 **Developing a flexible automated continuous downstream processing system for research to clinical supply** (Poster #13)  
Ben Gay, CPI, United Kingdom

13:50 – 13:55 **Clarification of cell culture broth using single use disposable BioSettlers** (Poster #16)  
Dhinakar Kompala, Sudhin Biopharma Company, USA

13:55 – 14:00 **Standardization of visible particles measurement in single-use systems, an advantage for the emerging applications** (Poster #22)  
Fanny Gaston & Melanie Gauthier, Sartorius Stedim FMT SAS, France

### Session 3: Single-Use advantages in continuous and connected processing

*Sponsored by Cytiva*

Chairs: Catherine Piton, Pall Biotech, United Kingdom  
Mark Brower, Merck, USA

14:00 – 14:10 Introduction by Session Chairs

14:10 – 14:30 **Intensified bioprocessing enabling single-use technologies**  
Martin Glenz, Pall Biotech, Germany

14:30 – 14:50 **From N-1 to purified product in a closed and connected single use technology process industry**  
Andreas Castan, Cytiva, Sweden

14:50 – 15:10 **Process intensification: Impact on cost, facility footprint and sustainability matrix**  
Miriam Monge, Sartorius, France

15:10 – 15:30 **cGMP friendly single-use TFF filter for continuous biologics manufacturing**  
Francisco Pelaez, Merck & Co., Inc., USA

15:30 – 16:00 **Q&A Panel Discussion**

16:00 – 16:30 Stretch Break

16:30 – 18:30 **Poster session 2** with drinks and snacks

**Tuesday, March 22, 2022 (continued)**

- |               |                                                                                                                                                                   |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18:30 – 19:30 | <b>Keynote</b><br><b>Pathways to evaluate and improve the sustainability of plastics – an overview</b><br>Hans-Josef Endres, Leibniz University Hannover, Germany |
| 19:30 – 21:30 | Banquet Dinner and Awards at the hotel                                                                                                                            |

## **Wednesday, March 23, 2022**

- 07:00 – 08:30 Breakfast
- Session 4: Single-use adoption in emerging applications**  
Chairs: Qasim Rafiq, University College London, United Kingdom  
Sandrine Morgenstern-Egli, Lonza AG, Switzerland
- 08:30 – 08:40 Introduction by Session Chairs
- 08:40 – 09:00 **Process development for improved Car-t production utilizing an automated single use perfusion stirred-tank bioreactor**  
Tiffany Hood, University College London, United Kingdom
- 09:00 – 09:20 **Integrated upstream and midstream processing with scalable pre-configured single-use assemblies for accelerated commercial reach**  
Thomas Robert, Univercells Technologies, Belgium
- 09:20 – 09:40 **Scale-down of an orbital shaken bioreactor: High cell density cultivation in perfusion mode and virus production**  
Sven Göbel, Max-Planck Institute, Germany
- 09:40 – 10:00 **Microbiome product manufacture out of a SU facility set up**  
Christopher McChalicher, Seres Therapeutics, USA
- 10:00 – 10:30 **Q&A Panel Discussion**
- 10:30 – 11:00 Coffee Break
- Session 5: Single use and sustainability**  
***Sponsored by Südpack Medica AG***  
Chairs: Kristi Budzinski, Roche Genentech, USA  
Nelly Montenay, Sartorius, France
- 11:00 – 11:10 Introduction by Session Chairs
- 11:10 – 11:30 **Sustainable resins for single-use technologies**  
Hans de Brouwer, SABIC, Netherlands
- 11:30 – 11:50 **Growth through sustainable business model innovation using ICIS Framework**  
Chor Sing Tan, Cytiva, USA
- 11:50 – 12:10 **Reduction of water and water-related energy consumption by in-situ media and buffer preparation on demand in continuous integrated**  
Daniel Komuczki, BOKU University of Natural Resources and Life Sciences, Austria
- 12:10 – 12:30 **Learning from flexpack industry: Closing the loop**  
Juergen Betz, Südpack, Germany
- 12:30 – 13:00 **Q&A Panel Discussion**
- 13:00 – 13:30 Chairs' closing remark
- 13:30 Lunch & Departure



## Poster Presentation

1. **High-cell density cryopreservation strategy**  
Julien Muzard, Entegris, France
2. **A high-throughput single-use platform for vaccine bioprocess development**  
Sarah Slack, University College London, United Kingdom
3. **Supply of customized Single-Use-Mixer's under tight circumstances became an issue under COVID**  
Per Stobbe, CerCell A/S, Denmark
4. **Tight controlled scalable Perfusion-SUBs from 250 ml and up**  
Per Stobbe, PerfuseCell A/S, Denmark
5. **Automated microscale tools for speeding up both single use and reusable process development during pandemic scenarios**  
Jasmin Samaras, University College London, United Kingdom
6. **SARS-COV-2 production in a single-use scalable high cell density bioreactor**  
Anna Offersgaard, Copenhagen University Hospital-Hvidovre, Denmark
7. **Bioprocess characterization at the micro-scale: Optical sensor integration in a novel capillary-wave micro-bioreactor**  
Kevin Viebrock, Technische Universität Braunschweig, Germany
8. **A fluorescent optical ammonia sensor - Suitable for online bioprocess monitoring**  
Torsten Mayr, Graz University of Technology, Institute of Analytical Chemistry, Austria
9. **µRAMOS: Online monitoring of respiration activities in 96-Deepwell Microtiter plates**  
Robert Dinger, AVT-BioVT RWTH Aachen University, Germany
10. **Challenges of the workflow for integration of sensors into single-use systems**  
Henry Weichert, Sartorius Stedim Biotech GmbH, Germany
11. **In-line monitoring and control of glucose concentration with single-use sensors in CHO and stem cell applications**  
Jan Müller, Zurich University of Applied Sciences, Switzerland
12. **Enhancements for a more reliable single-use pH sensor**  
Stefan Bardeck, Mettler Toledo, Switzerland
13. **Developing a flexible automated continuous downstream processing system for research to clinical supply**  
Ben Gay, CPI, United Kingdom
14. **Advances in hollow fiber membrane technology for high density perfusion cell culture**  
Jessica McRoskey, Meissner Filtration Products, USA
15. **Advantage of high turndown SUB for intensified process**  
Edward Chan, Genentech, Inc., USA
16. **Clarification of cell culture broth using single use disposable BioSettlers**  
Dhinakar Kompala, Sudhin Biopharma Company, USA

17. **Integrated upstream and midstream processing with scalable pre-configured single-use assemblies for accelerated commercial reach**  
Thomas Robert, Univercells Technologies, Belgium
18. **The science behind the integrity of single-use system: Investigating liquid leak and microbial ingress mechanisms to determine the maximum allowable leakage limit**  
Nathalie Pathier, Sartorius Stedim Biotech GmbH, Germany
19. **Isolation of acellular derivatives of human amniotic fluid in single-use implementation**  
Mikhail Skliar, University of Utah, USA
20. **Fluid dynamics in a novel single-use bioreactor for personalised T-cell therapies**  
Gergana Georgieva Atanasova, University College London, United Kingdom
21. **Manual visual inspection for particulates in single-use systems: Method development and validation**  
Klaus Wormuth, Sartorius Stedim Biotech, Germany
22. **Standardization of visible particles measurement in single-use systems, an advantage for the emerging applications**  
Fanny Gaston & Melanie Gauthier, Sartorius Stedim FMT SAS, France
23. **Process development of a serum-free and scalable lentiviral vector production in a single-use bioreactor**  
Carme Ripoll Fiol, University College London, United Kingdom
24. **A new single-use disk stack separator for pilot scale CHO cell-based antibody productions**  
Vivian Ott, Zurich University of Applied Sciences, Switzerland
25. **Addressing the pain-points of single-use intensified multi-product downstream and liquid processing in a dancefloor production room layout**  
Stuart Tindal, Sartorius Stedim Stedim Biotech GmbH, Germany
26. **WITHDRAWN**
27. **Cell growth performance with a new single-use film**  
Diana Perez, Merck BioProcessing, USA
28. **Driving innovation in sustainability through product Life Cycle Assessments**  
Nicole Hunter, Watson-Marlow Fluid Technology Group, United Kingdom
29. **Preliminary evaluation of PendoTECH® single use sensors post X-ray irradiation**  
Nick Troise, PendoTECH, USA
30. **Engineering characterisation of a cubic single-use bioreactor geometry**  
Jordan Delbridge, University College London, United Kingdom
31. **Design verification testing methodology for new Rosemount pH sensor**  
Jacalyn Saint Rudolph, Emerson, USA
32. **Assessing alternate sparger configurations to mitigate supply chain risks in single-use bioreactors**  
Stephanie Ketcham, Bristol Myers Squibb, USA

33. **Study of mechanical behavior on single use bags welding under gamma irradiation**  
Nina Perier, Sartorius Stedim Biotech, France
34. **The challenges of performing high density perfusion processes in single use bioreactors**  
Anita Dabek, Lonza Biologics, United Kingdom
35. **Risk-based qualification of X-ray sterilization for single-use systems**  
Timo Neumann, Merck KGaA, Germany